

REMARKS

A copy of the Sequence Listing in computer readable form is attached hereto. The content of the paper copy of the Sequence Listing and the copy of the Sequence Listing in computer readable form is the same, and includes no new matter.

It is believed that by submitting the present amendment and sequence listing diskette, the application now fully complies with the requirements of 37 CFR 1.821-1.825. Favorable action by the examiner is solicited.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11-0345. Please credit any excess fees to such deposit account.

Respectfully submitted,

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TECH CENTER 1600/2900

<110> Seulberger, Harald
 Lerchl, Jenms
 Schmidt, Ralf-Michael
 Krupinska, Karin
 Falk, Jon

<120> DNA sequence encoding a hydroxyphenylpyruvate dioxygenase, and its
 overproduction in plants

<130> 0050/48141

<140> US 09/462,629

<141> 2000-01-11

<150> PCT/EP98/03832

<151> 1998-06-23

<160> 16

<170> WordPerfect version 6.1

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<211> 1565

<212> DNA

<213> hppd from barley

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<221> CDS

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Ala Ala Val Thr Pro Glu His Ala Arg Pro His Arg Met Val Arg Phe	
15 20 25 30	
aac ccg cgc agc gac cgc ttc cac acg ctc tcc ttc cac cac gtc gag	146
Asn Pro Arg Ser Asp Arg Phe His Thr Leu Ser Phe His His Val Glu	
35 40 45	
ttc tgg tgc gcg gac gcc gcc tcc gcc gcc ggc cgc ttc gcg ttc gcg	194
Phe Trp Cys Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala	
50 55 60	
ctc ggc gcg ccg ctc gcc gcc agg tcc gac ctc tcc acg ggg aac tcc	242
Leu Gly Ala Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser	
65 70 75	
gcg cac gcc tcc cag ctg ctc cgc tcg ggc tcc ctc gcc ttc ctc ttc	290
Ala His Ala Ser Gln Leu Leu Arg Ser Gly Ser Leu Ala Phe Leu Phe	
80 85 90	
acc gcg ccc tac gcc aac ggc tgc gac gcc gcc acc gcc tcc ctg ccc	338

Thr	Ala	Pro	Tyr	Ala	Asn	Gly	Cys	Asp	Ala	Ala	Thr	Ala	Ser	Leu	Pro		
95					100					105					110		
tcc	ttc	tcc	gcc	gac	gcc	gcg	cgc	cgg	ttc	tcc	gcc	gac	cac	ggg	atc		386
Ser	Phe	Ser	Ala	Asp	Ala	Ala	Arg	Arg	Phe	Ser	Ala	Asp	His	Gly	Ile		
				115					120					125			
gcg	gtg	cgc	tcc	gta	gcg	ctg	cgc	gtc	gca	gac	gcc	gcc	gag	gcc	ttc		434
Ala	Val	Arg	Ser	Val	Ala	Leu	Arg	Val	Ala	Asp	Ala	Ala	Glu	Ala	Phe		
			130					135					140				
cgc	gcc	agt	cgt	cga	cgg	ggc	gcg	cgc	ccg	gcc	ttc	gcc	ccc	gtg	gac		482
Arg	Ala	Ser	Arg	Arg	Arg	Gly	Ala	Arg	Pro	Ala	Phe	Ala	Pro	Val	Asp		
		145				150					155						
ctc	ggc	cgc	ggc	ttc	gcg	ttc	gcg	gag	gtc	gag	ctc	tac	ggc	gac	gtc		530
Leu	Gly	Arg	Gly	Phe	Ala	Phe	Ala	Glu	Val	Glu	Leu	Tyr	Gly	Asp	Val		
	160					165					170						
gtg	ctc	cgc	ttc	gtc	agc	cac	ccg	gac	ggc	acg	gac	gtg	ccc	ttc	ttg		578
Val	Leu	Arg	Phe	Val	Ser	His	Pro	Asp	Gly	Thr	Asp	Val	Pro	Phe	Leu		
	175				180					185					190		
ccg	ggg	ttc	gag	ggc	gta	acc	aac	ccg	gac	gcc	gtg	gac	tac	ggc	ctg		626
Pro	Gly	Phe	Glu	Gly	Val	Thr	Asn	Pro	Asp	Ala	Val	Asp	Tyr	Gly	Leu		
				195					200					205			
acg	cgg	ttc	gac	cac	gtc	gtc	ggc	aac	gtc	ccg	gag	ctt	gcc	ccc	gcc		674
Thr	Arg	Phe	Asp	His	Val	Val	Gly	Asn	Val	Pro	Glu	Leu	Ala	Pro	Ala		
			210					215					220				
gca	gcc	tac	atc	gcc	ggg	ttc	acg	ggg	ttc	cac	gag	ttc	gcc	gag	ttc		722
Ala	Ala	Tyr	Ile	Ala	Gly	Phe	Thr	Gly	Phe	His	Glu	Phe	Ala	Glu	Phe		
		225					230					235					
acg	gcg	gag	gac	gtg	ggc	acg	acc	gag	agc	ggg	ctc	aac	tcg	gtg	gtg		770
Thr	Ala	Glu	Asp	Val	Gly	Thr	Thr	Glu	Ser	Gly	Leu	Asn	Ser	Val	Val		
	240				245					250							
ctc	gcc	aac	aac	tcg	gag	ggc	gtg	ctg	ctg	ccg	ctc	aac	gag	ccg	gtg		818
Leu	Ala	Asn	Asn	Ser	Glu	Gly	Val	Leu	Leu	Pro	Leu	Asn	Glu	Pro	Val		
	255				260					265					270		
cac	ggc	acc	aag	cgc	cgg	agc	cag	ata	cag	acg	ttc	ctg	gaa	cac	cac		866
His	Gly	Thr	Lys	Arg	Arg	Ser	Gln	Ile	Gln	Thr	Phe	Leu	Glu	His	His		
				275					280					285			
ggc	ggc	ccg	ggc	gtg	cag	cac	atc	gcg	gtg	gcc	agc	agt	gac	gtg	ctc		914
Gly	Gly	Pro	Gly	Val	Gln	His	Ile	Ala	Val	Ala	Ser	Ser	Asp	Val	Leu		
			290					295					300				
agg	acg	ctc	agg	aag	atg	cgt	gcg	cgc	tcc	gcc	atg	ggc	ggc	ttc	gac		962
Arg	Thr	Leu	Arg	Lys	Met	Arg	Ala	Arg	Ser	Ala	Met	Gly	Gly	Phe	Asp		
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ttc	ctg	cca	ccc	ccg	ctg	ccg	aag	tac	tac	gaa	ggc	gtg	cga	cgc	ctt		1010
Phe	Leu	Pro	Pro	Pro	Leu	Pro	Lys	Tyr	Tyr	Glu	Gly	Val	Arg	Arg	Leu		
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gcc ggg gat gtc ctc tcg gag gcg cag atc aag gaa tgc cag gag ctg 1058
 Ala Gly Asp Val Leu Ser Glu Ala Gln Ile Lys Glu Cys Gln Glu Leu
 335 340 345 350

ggg gtg ctc gtc gat agg gac gac caa ggg gtg ttg ctc caa atc ttc 1106
 Gly Val Leu Val Asp Arg Asp Asp Gln Gly Val Leu Leu Gln Ile Phe
 355 360 365

acc aag cca gta ggg gac agg ccg acc ttg ttc ctg gag atg atc cag 1154
 Thr Lys Pro Val Gly Asp Arg Pro Thr Leu Phe Leu Glu Met Ile Gln
 370 375 380

agg atc ggg tgc atg gag aag gac gag aga ggg gaa gag tac cag aag 1202
 Arg Ile Gly Cys Met Glu Lys Asp Glu Arg Gly Glu Glu Tyr Gln Lys
 385 390 395

ggg ggc tgc ggc ggg ttc ggc aaa ggc aac ttc tcc gag ctg ttc aag 1250
 Gly Gly Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys
 400 405 410

tcc att gaa gat tac gag aag tcc ctt gaa gcc aag caa tct gct gca 1298
 Ser Ile Glu Asp Tyr Glu Lys Ser Leu Glu Ala Lys Gln Ser Ala Ala
 415 420 425 430

gtt cag gga tca taggatagaa gctgggtcctt gtatcatgggt ctcatggagc 1350
 Val Gln Gly Ser

aaaagaaaac aatgtttgttt gtaatatgctg tcgcacaatt atatcaatgt tataattgggt 1410

gaagctgaag acagatgtat cctatgtatg atgggtgtaa tggatggtag aggggctcac 1470

acatgaagaa aatgtagcgt tgacattggt gtacaatctt gcttgcaagt aaaataaaga 1530

acagattttg agttctgcaa aaaaaaaaaa aaaaaa 1565

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Arg Ser Asp Arg Phe His Thr Leu Ser Phe His His Val Glu Phe Trp
 35 40 45

Cys Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly
 50 55 60

Ala Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Ala His
 65 70 75 80

Ala Ser Gln Leu Leu Arg Ser Gly Ser Leu Ala Phe Leu Phe Thr Ala

85					90					95					
Pro	Tyr	Ala	Asn	Gly	Cys	Asp	Ala	Ala	Thr	Ala	Ser	Leu	Pro	Ser	Phe
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Ser	Ala	Asp	Ala	Ala	Arg	Arg	Phe	Ser	Ala	Asp	His	Gly	Ile	Ala	Val
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Arg	Ser	Val	Ala	Leu	Arg	Val	Ala	Asp	Ala	Ala	Glu	Ala	Phe	Arg	Ala
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145					150				155						160
Arg	Gly	Phe	Ala	Phe	Ala	Glu	Val	Glu	Leu	Tyr	Gly	Asp	Val	Val	Leu
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Arg	Phe	Val	Ser	His	Pro	Asp	Gly	Thr	Asp	Val	Pro	Phe	Leu	Pro	Gly
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Phe	Glu	Gly	Val	Thr	Asn	Pro	Asp	Ala	Val	Asp	Tyr	Gly	Leu	Thr	Arg
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Phe	Asp	His	Val	Val	Gly	Asn	Val	Pro	Glu	Leu	Ala	Pro	Ala	Ala	Ala
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Tyr	Ile	Ala	Gly	Phe	Thr	Gly	Phe	His	Glu	Phe	Ala	Glu	Phe	Thr	Ala
225						230			235						240
Glu	Asp	Val	Gly	Thr	Thr	Glu	Ser	Gly	Leu	Asn	Ser	Val	Val	Leu	Ala
			245						250					255	
Asn	Asn	Ser	Glu	Gly	Val	Leu	Leu	Pro	Leu	Asn	Glu	Pro	Val	His	Gly
			260					265					270		
Thr	Lys	Arg	Arg	Ser	Gln	Ile	Gln	Thr	Phe	Leu	Glu	His	His	Gly	Gly
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Pro	Gly	Val	Gln	His	Ile	Ala	Val	Ala	Ser	Ser	Asp	Val	Leu	Arg	Thr
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Pro	Pro	Pro	Leu	Pro	Lys	Tyr	Tyr	Glu	Gly	Val	Arg	Arg	Leu	Ala	Gly
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Asp	Val	Leu	Ser	Glu	Ala	Gln	Ile	Lys	Glu	Cys	Gln	Glu	Leu	Gly	Val
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Pro	Val	Gly	Asp	Arg	Pro	Thr	Leu	Phe	Leu	Glu	Met	Ile	Gln	Arg	Ile
					370		375				380				
Gly	Cys	Met	Glu	Lys	Asp	Glu	Arg	Gly	Glu	Glu	Tyr	Gln	Lys	Gly	Gly
385					390					395					400

Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile
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Gly Ser

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